

In the Claims:

1. (Currently Amended) A surgical instrument holder ~~(10)~~ comprising:
  - (a) a head assembly ~~(68)~~ having a shank ~~(12)~~ with a first driveable end ~~(14)~~ and second coupling end ~~(16)~~, the second end comprising a coupling device ~~(20)~~ having an interface ~~(22)~~ for receiving a surgical instrument ~~(24)~~ and held in functional assembly to the shank by a releasable locking mechanism ~~(26)~~ comprised of a locking ring ~~(30)~~ slideably disposed about the shank, a spring ~~(32)~~ biased against the coupling device ~~(20)~~ by the locking ring, and a connection ring device ~~(34)~~ retaining the locking ring in a fixed position during use; and
  - (b) a drive spindle assembly ~~(42)~~, connected to the head assembly ~~(68)~~ so as to transmit torque therethrough, the spindle assembly comprising an elongated drive spindle ~~(40)~~, high-precision bearings ~~(44, 120, 122)~~ and a cylindrical tube ~~(46)~~, wherein the drive spindle ~~(40)~~ is releasably mounted to an end ~~(36)~~ of the spindle assembly and is supported for rotation within the cylindrical tube ~~(46)~~ by the high-precision bearings disposed therebetween and held in place at least in part by the shank ~~(12)~~, the bearings ~~(44)~~ precisely controlling the position of a surgical instrument ~~(24)~~ affixed thereto; and
  - c) wherein further, the connection ring device ~~(34)~~ provides a common quick-release connection with the head assembly and the drive spindle assembly ~~(42)~~, whereupon unlocking of the connection device ~~(34)~~ enables quick disassembly of the connection ring

device, spring ~~(32)~~, locking ring ~~(30)~~, and drive spindle assembly ~~(42)~~ for cleaning and component sterilization.

2. (Currently Amended) The surgical instrument holder ~~(10)~~ of claim 1~~[[,]]~~ wherein the locking ring ~~(30)~~ of the releasable locking mechanism ~~(26)~~ is moveable in a locking direction to lock ~~the~~ an instrument ~~(24)~~ onto the interface ~~(22)~~.

3. (Currently Amended) The surgical instrument holder ~~(10)~~ of claim 1~~[[,]]~~ wherein the connection ring device ~~(34)~~ comprises at least one pin ~~(54)~~ mounted in a coupling sleeve ~~(56)~~ against which the spring ~~(32)~~ is biased by the locking ring ~~(30)~~, the sleeve being slideable about the shank ~~(12)~~ so as to operate a ball-detent ~~(60)~~.

4. (Currently Amended) The surgical instrument holder of claim 1 ~~(10)~~, wherein a handle ~~(62)~~ is attached to the first end of the elongated spindle assembly ~~(42)~~.

5. (Currently Amended) The surgical instrument holder ~~(10)~~ of claim 1~~[[,]]~~ wherein the spindle ~~(40)~~ is held within a spindle tube ~~(46)~~ by precision ball bearings ~~(44, 120, 122)~~ which provide precision rotation of the spindle with the tube, and wherein the tube ~~(46)~~ is provided with position sensors ~~(125)~~, placed at pre-determined locations ~~(124)~~ on the tube, thereby enabling the instrument holder ~~(10)~~ to participate in the communication of position information.

6. (Currently Amended) The surgical instrument holder ~~(10)~~ of claim 1~~[[,]]~~ wherein the interface ~~(22)~~ is a recess ~~(22)~~ in the coupling end ~~(16)~~ of the shank ~~(12)~~.

7. (Currently Amended) The surgical instrument holder ~~(10)~~ of claim 6[[,]] wherein the recess ~~(22)~~ is cylindrical and coaxial with a central axis ~~(64)~~ of the shank ~~(12)~~.
8. (Currently Amended) The surgical instrument holder ~~(10)~~ of claim 7[[,]] wherein a chamfered surface ~~(66)~~ is disposed within the recess ~~(22)~~ to align ~~the~~ an instrument ~~(24)~~ axially.
9. (Currently Amended) The surgical instrument holder ~~(10)~~ of claim 1[[,]] wherein the spring ~~(32)~~ is a helical compression spring.
10. (Currently Amended) The surgical instrument holder ~~(10)~~ of claim 2[[,]] wherein the locking ring device ~~(30)~~ is disposed in the coupling end ~~(16)~~ of the shank ~~(12)~~.
11. (Currently Amended) The surgical instrument holder ~~(10)~~ of claim 2[[,]] wherein the connection ring device ~~(34)~~ activates at least one ball-detent ~~(60)~~.
12. (Currently Amended) The surgical instrument holder ~~(10)~~ of claim 11[[,]] wherein the connection ring device ~~(34)~~ activates at least two circumferentially spaced apart ball-detents ~~(60)~~.
13. (Currently Amended) The surgical instrument holder ~~(10)~~ of claim 2, wherein the locking direction is toward the coupling end ~~(16)~~ of the shank ~~(12)~~.

14. (Currently Amended) The surgical instrument holder ~~(10)~~ of claim 1~~[[,]]~~ wherein the connection ring ~~device~~ ~~(34)~~ cooperates with a bayonet slot ~~(94)~~ to lock the connection ring ~~device~~ on the shaft ~~(12)~~.

15. (Currently Amended) The surgical instrument holder ~~(10)~~ of claim 14~~[[,]]~~ wherein the pin ~~(54)~~ of the connection ring ~~device~~ ~~(34)~~ locks in the bayonet slot ~~(94)~~.

16. (Currently Amended) The surgical instrument holder ~~(10)~~ of the claim 15~~[[,]]~~ wherein the bayonet slot ~~(94)~~ is disposed on the shank ~~(12)~~.

17. (Currently Amended) The surgical instrument holder ~~(10)~~ of claim 11~~[[,]]~~ wherein the ball-detent ~~(60)~~ comprises a ball ~~(106)~~ received into an annular recess ~~(110)~~ in the instrument holder, the locking component ~~(34)~~ sliding over the ball detent ~~(60)~~ to bias a ball ~~(106)~~ into the recess ~~(110)~~ to lock the shank ~~(12)~~ onto the drive spindle ~~(36)~~ in a manner to lock the cover assembly ~~(45)~~ including the bearings ~~(122)~~ in place.

18. (Currently Amended) The surgical instrument holder ~~(10)~~ of claim 1~~[[,]]~~ wherein the interface ~~(22)~~ is a recess intersected by a transverse slot ~~(76)~~ in which a wall ~~(80)~~ of the slot engages a corresponding surface ~~(82)~~ of the instrument ~~(24)~~.

19. (Currently Amended) The surgical instrument holder ~~(10)~~ of claim 18~~[[,]]~~ wherein the recess ~~(22)~~ includes a seat ~~(84)~~ shaped to receive the end of ~~the~~ an instrument ~~(24)~~ about its circumference ~~(86)~~.

20. (Currently Amended) The surgical instrument holder (10) of claim 1[[,]] wherein the shank (12) is hollow along its length so as to provide a channel (90) facilitating chip removal.

21. (Currently Amended) The surgical instrument holder (10) of claim 1[[,]] wherein the tube (46) includes position sensors (124) mounted on the spindle (40) which participate in the communication of position information to a computer to aid in computer assisted surgery.

22. (Currently Amended) The surgical instrument holder (10) of claim 1[[,]] wherein a frustoconical widened part (100) provides a grip for the thumb and index finger for pulling the locking ring component (30) back counter to the action of the spring (32) in order to release the an instrument (24) fixed on the instrument holder.

23. (Currently Amended) The surgical instrument holder (10) of claim 1[[,]] wherein[[,]] the connection ring permits disconnection of the spindle assembly (42) ~~is disconnectable~~ from the head assembly (68) ~~by means of the common connection device (34)~~ when a user holds the connection ring device (34) having an internal stud (54) against a bias of the spring (32), then turns the connection ring (34) in such a way that its stud (54) leaves a bayonet catch (94) so as to unlock the connection ring from the catch, the user being able to remove the connection ring (34) from the shank (12), and then the spring (32), followed by the locking ring component (30) as well.

24. (New) A surgical instrument holder comprising:
- a) a head assembly having a shank with a first driveable end and second coupling end, the second end comprising a coupling device having an interface for receiving a surgical instrument and held in functional assembly to the shank by a releasable locking mechanism comprised of a locking ring slideably disposed about the shank, a spring biased against the coupling device by the locking ring, and a connection device retaining the locking ring in a fixed position during use; and
  - b) a drive spindle assembly, connected to the head assembly so as to transmit torque there through, the spindle assembly comprising an elongated drive spindle, high-precision bearings and a cylindrical tube, wherein the drive spindle is releasably mounted to an end of the spindle assembly and is supported for rotation within the cylindrical tube by the high-precision bearings disposed there between and held in place at least in part by the shank, the bearings precisely controlling the position of a surgical instrument affixed thereto; and
  - c) wherein further, the connection device provides a common quick-release connection with the head assembly and the drive spindle assembly, whereupon unlocking of the connection device enables quick disassembly of the connection device, spring, locking ring, and drive spindle assembly for cleaning and component sterilization.